

REMARKS

Summary of Office Action

Claims 1-41 are pending in the above-identified patent application.

The Examiner has rejected claims 1-3, 7, 8, 18, 21-23, 27, 28, 30-32, 34 and 37 under 35 U.S.C. § 102(b) as being anticipated by Riley, Jr. U.S. Patent 4,272,729. Claims 19 and 20 have been rejected under 35 U.S.C. § 103(a) as being obvious from Riley in view of Starr U.S. Patent 6,633,185. Claims 33, 35, 36 and 38-41 have been rejected under 35 U.S.C. § 103(a) as being obvious from Jefferson U.S. Patent 5,744,991 in view of Riley. Claims 32-41 have been objected to under 37 C.F.R. § 1.75(c) as being of improper dependent form. Each of claims 4-6, 9-17, 24-26 and 29 has been objected to as depending from a rejected base claim, but allowable subject matter has been indicated.

Summary of Applicant's Reply

Applicant notes with appreciation the indication of allowable subject matter in claims 4-6, 9-17, 24-26 and 29, and hereby expressly reserves the right to rewrite any one or more of those claims in independent form should the base claims ultimately not be allowed.

The Examiner's rejection and objections are respectfully traversed.

Applicant's Reply to the Objection to Claims 32-41

Claims 32-41 have been objected to under 37 C.F.R. § 1.75(c) as being of improper dependent form, for allegedly failing to further limit the subject matter of a previous claim. This objection is respectfully traversed.

Independent claim 1 defines a particular type of loop circuit. Each of claims 32-36 defines a programmable logic device ("PLD") incorporating, inter alia, such a loop circuit, or a printed circuit board incorporating such a PLD. Each of claims 37-41 defines an integrated circuit ("IC") device incorporating, inter alia, such loop circuit, or a printed circuit board incorporating such an IC device.

The basis of the Examiner's objection is not

clear, but the Examiner appears to be objecting to the fact that the independent and dependent claims are drawn to different types of products. However, MPEP § 608.01(n) (III) explicitly permits such dependent claims. For example, in the context of discussing a method claim that depends from a product claim, that section states that "if claim 1 recites a specific product, a claim for the method of making the product of claim 1 in a particular manner would be a proper dependent claim."

According to MPEP § 608.01(n) (III), the only valid test for the propriety of a dependent claim is whether or not the dependent claim could conceivably be infringed by something that would not infringe the independent claim, in which case the claim would be improper. That is not the case here -- any PLD or IC device incorporating the loop circuit of claim 1, which therefore falls within claim 32 or 37, also would inherently infringe claim 1. Similarly, any printed circuit board incorporating the PLD of claim 32 or the IC device of claim 37, which falls within one of claims 33-36 or 38-41, respectively, also would inherently infringe claim 1 and claim 32 or 37.

For these reasons, applicant respectfully submits that each of claims 32-41 is a proper dependent claim, and respectfully requests that the objection under 37 C.F.R. § 1.75(c) be withdrawn.

Applicant's Reply to the
Prior Art Rejections

Claims 1-3, 7, 8, 18, 21-23, 27, 28, 30-32, 34 and 37 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Riley. Claims 19 and 20 have been rejected under 35 U.S.C. § 103(a) as being obvious from Riley in view of Starr '185. Claims 33, 35, 36 and 38-41 have been rejected under 35 U.S.C. § 103(a) as being obvious from Jefferson in view of Riley. These rejections are respectfully traversed.

Independent claim 1 defines a loop circuit (e.g., a phase-locked loop or a delay-locked loop) including, inter alia, a compensation component, a high-gain coarse feedback path for driving the compensation component to within a

predetermined variance of a reference signal, and a low-gain fine feedback path for driving the compensation component to lock with the reference signal after the coarse feedback path has driven the compensation component to within the predetermined variance of the reference signal.

As an example, in one embodiment described in the specification, and specifically defined in claims 7 and 27, the fine feedback path is disabled until the coarse lock is achieved. According to an embodiment described in the specification, after coarse lock has been achieved, the coarse feedback path is fixed. This has the effect of preventing fluctuations in the reference signal from affecting the locked loop output. First, the high gain of the coarse feedback path gets the circuit close to lock faster, but because the coarse feedback path is fixed after coarse lock and therefore insensitive to the fluctuations, the fluctuations do not affect output even though there is high gain. Second, the fine feedback path has low gain, so the effect of fluctuations in the fine feedback path on the output is small.

Riley neither shows nor suggests the claimed invention.

Riley shows a phase-locked loop with coarse and fine feedback paths. However, Riley does not disclose that the coarse feedback path is a high-gain path while the fine feedback path is a low-gain path. That alone should end the inquiry, as the claimed structure simply is not disclosed. Moreover, that lack of disclosure is more than academic. Thus in Riley, the fine feedback path could have high gain, resulting in significant drift of the output if the fine feedback path is subject to fluctuation of , e.g., the reference signal.

The Examiner identifies the successive approximation register 30 of Riley as providing the claimed high gain, and switch 44 of Riley as providing the claimed low gain. Applicant respectfully disagrees.

Successive approximation register 30 merely digitizes the error signal in the coarse feedback path. It does not provide any gain in that path. Therefore, it does

not meet the high-gain coarse feedback limitation of applicant's claims.

Similarly, switch 44 is used to connect the fine tuning input of the voltage-controlled oscillator either to a fixed voltage such as ground (e.g., for startup purposes) or to the fine feedback path for regular operation. Switch 44 does not provide any gain -- whether high or low -- in the fine feedback path. Moreover, if there is high gain somewhere in the fine feedback path, switch 44 does not limit that gain, and therefore provides no help in reducing output fluctuations resulting from reference fluctuations. To the extent that switch 44 could be considered a zero-gain device when connected to the fixed voltage, when switch 44 is in that position, the fine feedback path is not operating, and thus switch 44 cannot meet the low-gain fine feedback limitation of applicant's claims. Therefore, Riley does not meet the low-gain fine feedback limitation.

The remaining references do not make up the deficiencies of Riley in failing to show or suggest the claimed high-gain coarse feedback path or the claimed low-gain fine feedback path. Jefferson is cited only for its disclosure of processing circuitry incorporating a loop circuit, while Starr '185 is cited only for its disclosure of scaling counters.

In addition, Starr '185 is not a proper reference against this application. Starr '185 issued after this application was filed, based on an earlier-filed application. Thus, Starr '185 is available as a reference, if at all, only under 35 U.S.C. § 102(e). However, a reference under Section 102(e) must describe an invention that was made by "another," while inventor "Greg Starr" of Starr '185 is the same person as present applicant "Gregory Starr" and therefore is not "another." Accordingly, Starr '185 is not available under 35 U.S.C. § 102(e). Moreover, Starr '185 is commonly assigned with the present application and the present invention was subject to an obligation of assignment to the common assignee at the time it was made. Therefore, even if Starr '185 were available as a


Section 102(e) reference, it is unavailable for rejections under 35 U.S.C. § 103(a) in view of 35 U.S.C. § 103(c).

For these reasons, applicant respectfully submits that the prior art rejections should be withdrawn.

Conclusion

For the reasons set forth above, applicant respectfully submits that this application is in condition for allowance. Reconsideration and prompt allowance of this application are respectfully requested.

Respectfully submitted,



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